Claims

1. A drive unit arrangement of a processing machine, having a plurality of units (01, 02, 04, 06, 07) which are driven, mechanically independently of each other, by drive motors (M) via drive units (08) assigned to each one of them, and having at least one first signal line (09) connecting the drive units (08), or a lower-order drive control unit (17) of these units (01, 02, 04, 06, 07), which carries signals from a master shaft position (Phi) of a virtual master shaft (a, b), characterized in that an offset (Delta Phi_i), which defines a displacement of the angular position set point (Phi_i') in respect to the master shaft position (Phi, Phia, Phib), can be provided to the drive units (08), or to a lower-order drive control unit (17), via at least one second signal line (14), which differs from the first signal line (09).

2. The drive unit arrangement in accordance with claim 1. characterized in that the signal line (09) is connected with a higher-order control unit (13, 17) which generates the signals of the master shaft position (Phi).

3. The drive unit arrangement in accordance with claim 2, characterized in that at least one lower-order drive control unit (17) is provided between the higher-order drive control unit (13, 17) and the drive unit (08), to which signals regarding the actual master shaft position (Phi) and/or the master shaft movement are transmitted via the

signal line (09), and which is designed to perform the specific processing of control signals for at least one of the individual drive units (08) assigned to this lower-order drive control unit (17) by using the actual master shaft position (Phi) and/or the master shaft movement.

4. A drive unit arrangement of a processing machine, having a plurality of units (01, 02, 04, 06, 07) which are driven, mechanically independently of each other, by drive motors (M) via drive units (08) assigned to each one of them, and having at least one first signal line (09) connecting the drive units (08), or a lower-order drive control unit (17) of these units (01, 02, 04, 06, 07), which carries signals from a master shaft position (Phi) of a virtual master shaft (a, b) generated by a higher-order drive control unit (13, 17), characterized in that at least one lower-order drive control unit (17) is provided between the higher-order drive control unit (13, 17) and the drive unit (08), to which signals regarding the actual master shaft position (Phi) and/or the master shaft movement are transmitted via the signal line (09), and which is designed to perform the specific processing of control signals for at least one of the individual drive units (08) assigned to this lower-order drive control unit (17) by using the actual master shaft position (Phi) and/or the master shaft movement.

5. The drive unit arrangement in accordance with claim 4, characterized in that an offset (Delta Phi_i) can be transmitted to the drive units (08) or to a lower-order drive control unit (17) via at least one second signal line (14),

which differs from the first signal line (09), which offset defines a displacement of a angular position set point (Phi_i') in respect to the master shaft position (Phi, Phia, Phib).

6. The drive unit arrangement in accordance with claim 1 or 5, characterized in that the offset (Delta Phi_i) represents a permanent, but changeable displacement of the angular position set point (Phi_i') in respect to the master shaft position (Phi, Phia, Phib).

7. The drive unit arrangement in accordance with claim 1 or 4, characterized in that at least one drive unit (08) of a printing group (03), which prints on the web, and a drive unit (08) of a downstream connected unit (06), which further processes the web, are respectively connected with the signal line (09), and an offset (Delta Phi_i) can be assigned to each one of these two drive units (08).

8. The drive unit arrangement in accordance with claim 1 or 4, characterized in that each of the drive units (08) is connected via a lower-order drive control unit (17) with the signal line (09).

9. The drive unit arrangement in accordance with claim 7, characterized in that the further processing unit (06) is a folder (06).

10. The drive unit arrangement in accordance with claim 1 or 4, characterized in that at least all drive units

(08), which are assigned to a specific web track for the rotary driving of units (01, 02, 03, 04, 06, 07) and which must meet the requirement of keeping registration in the conveying direction of the web, are connected with a common signal line (09).

11. The drive unit arrangement in accordance with claim 10, characterized in that an offset (Delta Phi_i) is assigned to at least these drive units (08).

12. The drive unit arrangement in accordance with claim 1 or 5, characterized in that the offset value (Delta Phi_i) of a unit (01, 02, 03, 04, 06, 07) specifying the master shaft position (Phi) is zero.

13. The drive unit arrangement in accordance with claim 1, characterized in that several of the drive units (08) of these units (01, 02, 03, 04, 06, 07) which are driven mechanically independently of each other is connected via a common lower-order drive control unit (17) with the signal line.

14. The drive unit arrangement in accordance with claim 13, characterized in that several of the drive units (08) with their units (01, 02, 03, 04, 06, 07) form a group (18).

15. A drive unit arrangement of a processing machine, having a plurality of units (01, 02, 03, 04, 06, 07) which are driven mechanically independently of each other by drive

motors (M) via respectively assigned drive units (08), and which are respectively rotatorily driven as a function of a master shaft position (Phi) of a virtual master shaft (a, b), characterized in that between drive units (09) of a group (18) of units (01, 02, 03, 04, 06, 07) and a higher-order drive control unit (13), which specifies the master shaft position (Phi), a lower-order drive control unit (17) is arranged, which is assigned to all units (01, 02, 03, 04, 06, 07) of this group, and is designed to perform a specific processing of control signals for drive units (08) assigned to this group (18), using the actual master shaft position (Phi) and/or the master shaft movement.

16. The drive unit arrangement in accordance with claim 14 or 15, characterized in that the group (18) has several printing groups (03).

17. The drive unit arrangement in accordance with claim 14 or 15, characterized in that the group (18) has several sub-groups (02), in particular printing units (02), each with at least one printing group (03).

18. The drive unit arrangement in accordance with claim 14 or 15, characterized in that the drive units (08, 09) of the group (18) can be assigned to different master shafts (a, b).

19. The drive unit arrangement in accordance with claim 15, characterized in that a signal line (09) is

provided, which carries the signals regarding the actual master shaft position (Phi) and/or master shaft movement.

20. The drive unit arrangement in accordance with claim 1, 4 or 19, characterized in that the signal line (09) carries signals regarding the master shaft position (Phi, Phia, Phib) of several virtual master shafts (a, b).

21. The drive unit arrangement in accordance with claim 17 and 20, characterized in that the drive units (08) of the sub-groups (18) receive angular position set points (Phi_i') in respect to different virtual master shafts (a, b).

22. The drive unit arrangement in accordance with claim 1 or 4, characterized in that the specific offset values (Delta Phi_i) are specified in the drive control unit (13, 17).

23. The drive unit arrangement in accordance with claim 1 or 4, characterized in that the specific offset values (Delta Phi_i) are specified in the lower-order drive control unit (13, 17).

24. The drive unit arrangement in accordance with claim 22 or 23, characterized in that specific angular position set points (Phi_i') for the individual drive units (08) are formed in the drive control unit (13, 17) from the master shaft position (Phi, Phia, Phib) and the specific

offset value (Delta Phi_i) and are fed to the respective drive units (08).

25. The drive unit arrangement in accordance with claim 1 or 5, characterized in that the units (01, 02, 03, 04, 06, 07) are connected with each other and with a computing and data processing unit (11) via the signal line (14), which is different from the signal line (09).

26. The drive unit arrangement in accordance with claim 25, characterized in that the offset values (Delta Phi_i) are fed to the lower-order drive control units (17) via this signal line (14).

27. The drive unit arrangement in accordance with claim 25, characterized in that a communication between the computing and data processing unit (11) and the units (01, 02, 03, 04, 06, 07), at least regarding set point specifications and transmission of actual values for actuating members and/or drive units of the units (01, 02, 03, 04, 06, 07) which are different from the drive units (08), is provided via this signal line (14).

28. The drive unit arrangement in accordance with claim 1 or 5, characterized in that an operating unit is provided, into which the offset values (Delta Phi_i) can be entered.

29. The drive unit arrangement in accordance with claim 1 or 5, characterized in that a memory unit is provided, in which the offset values (Delta Phi_i) for the individual drive units regarding a specific production run can be stored and can be read out from it when required.

30. A method for driving a processing machine, wherein a plurality of units (01, 02, 03, 04, 06, 07) are driven, mechanically independent of each other, by drive units (08), and signals from a master shaft position (Phi) of a virtual master shaft (a, b) are carried in at least one signal line (09), which connects these units (01, 02, 03, 04, 06, 07), characterized in that an offset (Delta Phi_i) is assigned to each of the drive units (08), which defines a permanent, but changeable displacement of an angular position set point (Delta Phi_i') in respect to the master shaft position (Phi, Phia, Phib), that prior to the start-up of the processing machine the master shaft position (Phi) is aligned in accordance with the actual angular position of one of the units (01, 02, 03, 04, 06, 07), and that during the operation of the processing machine the master shaft position (Phi) is specified by a higher-order drive control unit (13, 17), which is connected with the signal line (09).

31. A method for driving a processing machine, wherein a plurality of units (01, 02, 03, 04, 06, 07) is driven, mechanically independent of each other, by drive units (08), and signals from a master shaft position (Phi) of a virtual master shaft (a, b) are carried in at least one signal line

(09), which connects these units (01, 02, 03, 04, 06, 07), characterized in that an offset (Delta Phi_i) is assigned to each of the drive units (08), which defines a permanent, but changeable displacement of an angular position set point (Delta Phi_i') in respect to the master shaft position (Phi, Phia, Phib), that prior to the start-up of the processing machine the master shaft position (Phi) is aligned by means of its position it had occupied last and which is stored, and that during the operation of the processing machine the master shaft position (Phi) is specified by a higher-order drive control unit (13, 17), which is connected with the signal line (09).

32. The method in accordance with claim 31, characterized in that following the stopping of the processing machine the last master shaft position (Phi) taken up is stored in a memory unit, and the master shaft position (Phi) is aligned by means of this stored master shaft position (Phi) prior to the next start-up.

33. A method for driving a processing machine, wherein a plurality of units (01, 02, 03, 04, 06, 07) are driven, mechanically independent of each other, by drive units (08), and signals from a master shaft position (Phi) of a virtual master shaft (a, b) are carried in at least one signal line (09), which connects these units (01, 02, 03, 04, 06, 07), characterized in that the master shaft position (Phi) is specified by the angular position of a printing group (03), and that an offset (Delta Phi_i) is assigned to at least the remaining drive units (08) associated with the production

run, which determines a permanent, but changeable displacement of an angular position set point (Phi_i') in respect to the master shaft position (Phi, Phia, Phib).

34. The method in accordance with claim 33, characterized in that prior to the start-up of the processing machine, the master shaft position (Phi) is aligned in accordance with the actual angular position of a printing group (03).

35. The method in accordance with claim 34, characterized in that during the operation of the processing machine, the master shaft position (Phi) continues to be specified by the angular position of the printing group (03).

36. The method in accordance with claim 34, characterized in that during the operation of the processing machine, the master shaft position (Phi) is specified by a higher-order drive control unit (13, 17), which is connected with the signal line (09).

37. The method in accordance with claim 33, characterized in that during the operation of the processing machine, the master shaft position (Phi) is specified by a drive control unit (17) assigned to the printing group (03).

38. The method in accordance with claim 33, characterized in that prior to the alignment of the master shaft position (Phi), one of several possible printing groups (03) is selected as reference.

39. The method in accordance with claim 30 or 31, characterized in that during the operation an angular position set point (Phi_i') approximating the master shaft position (Phi) generated by the drive control unit (13, 17) is specified for at least all rotatory drive units (08) of units (01, 02, 03, 04, 06, 07), which are assigned to a specific web track and which must meet the requirement of keeping registration in the conveying direction of the web.

40. The method in accordance with claim 30, 31 or 33, characterized in that an offset (Delta Phi_i) is respectively assigned to at least one drive unit (08) connected with the signal line (09) of a printing group (03) printing on the web, and to the drive unit (08) connected with the signal line (09) of a downstream located unit (06), which processes the web further.

41. The method in accordance with claim 30 or 31, characterized in that during the operation of the processing machine the master shaft position (Phi) is specified, independently of an actual angular position of one of the units (01, 02, 03, 04, 06, 07), only by the drive control unit (13, 17).

42. The method in accordance with claim 30, 31 or 33, characterized in that the specific offset values (Delta Phi_i) are specified in the drive control unit (13, 17).

43. A method for driving a processing machine, wherein a plurality of units (01, 02, 03, 04, 06, 07) are driven,

mechanically independent of each other, by drive units (08), characterized in that only signals of a master shaft position (Phi) of a virtual master shaft (a, b), which has not yet been adapted to the relative angular position set point of the individual drive units (08), are carried in a first signal line (09), and that in a second signal line (16, 16', 14, 25, 27) a specific offset (Delta Phi_i) is transmitted to each of the drive units (08) or to a lower-order drive control unit (17) of these units (01, 02, 03, 04, 06, 07), which specifies a displacement of an angular position set point (Phi_i') in respect to the master shaft position (Phi, Phia, Phib).

44. The method in accordance with claim 43, characterized in that the relevant master shaft position (Phi), which is relevant for the units (01, 02, 03, 04, 06, 07) participating in a production run, is issued by a higher-order drive control unit (13), and that the updating of the specific angular position set points for the individual drive units (08) of the units (01, 02, 03, 04, 06, 07) is only performed in the lower-order drive control unit (17), which transmits the specific angular position set points to the regulating unit (08) of the individual units (01, 02, 03, 04, 06, 07) as a specification.

45. A method for driving a processing machine, wherein a plurality of units (01, 02, 03, 04, 06, 07) is driven, mechanically independent of each other, by drive units (08), characterized in that only signals of a master shaft position (Phi) of a virtual master shaft (a, b), which has not yet

been adapted to the relative angular position set point of the individual drive units (08), are carried in a first signal line (09), that this master shaft position (Phi) is provided to a lower-order drive control unit (17), and that this lower-order drive control unit (17) determines a guide value for the positioning of the respective unit or its drive unit (08) and issues it to a group of several units (01, 02, 03, 04, 06, 07) on the basis of the master shaft position (Phi) and a respective specific offset (Delta Phi_i).

46. The method in accordance with claim 30, 31, 33, 43 or 45, characterized in that the specific offset values (Delta Phi_i) are specified in a lower-order drive control unit (13, 17), which is assigned to several drive units (08) which are located together downstream.

47. The method in accordance with claim 30, 31, 33, 43 or 45, characterized in that specific angular position set points (Phi_i') are formed from the master shaft position (Phi, Phia, Phib) for the individual drive units (08) in the drive control unit (13, 17) and are supplied to the drive units (08) involved.

48. The method in accordance with claim 30, 31, 33, 43 or 45, characterized in that the specific offset values (Delta Phi_i) are specified in the individual drive units (08), and that specific angular position set points (Phi_i') are formed there from the master shaft position (Phi, Phia, Phib) and the specific offset values (Delta Phi_i).

49. The method in accordance with claim 30, 31, 33, 43 or 45, characterized in that the offset values (Delta Phi_i) are entered at an operating unit.

50. The method in accordance with claim 30, 31, 33, 43 or 45, characterized in that the offset values (Delta Phi_i) for the individual drive units (08) for a specific production run are stored in a memory unit and are read out from it when required.